secondary source port in communication with at least one secondary source line. Forming **626** the first cassette may include forming the first cassette with a first pump chamber, at least one fluid pathway, and at least one valve managing the routing of fluid through the first cassette. Forming **626** the first cassette may include forming the first cassette with a reservoir port in communication with a reservoir inlet conduit coupled to an inlet port of the at least one reservoir. The method **620** may include forming **628** a second cassette including a pump chamber, at least one fluid pathway, and at least one valve managing routing of an extracellular matrix isolating or recellularizing fluid through the second cassette. Forming **628** the second cassette may include forming the second cassette with a reservoir inlet port in communication with a reservoir outlet conduit leading to an outlet port of the at least one reservoir. Forming **628** the second cassette may include forming the second cassette with a tissue engineering bioreactor interface port in communication with a bioreactor conduit leading to or into the tissue engineering bioreactor. In some configurations, method **620** may include forming a plurality of such second cassettes. The method **620** may include packaging **630** at least one reservoir, tissue engineering bioreactor, first cassette, and second cassette together to form a tissue engineering fluid handling set.

[0398] Various alternatives and modifications can be devised by those skilled in the art without departing from the disclosure. Accordingly, the present disclosure embraces all such alternatives, modifications and variances. Additionally, while several configurations of the present disclosure have been shown in the drawings and/or discussed herein, the disclosure is not limited thereto. Therefore, the above description should not be construed as limiting, but merely as exemplifications of particular configurations. And, those skilled in the art will envision other modifications within the scope and spirit of the claims appended hereto. The present teachings are also directed to a system and methods that can be executed in hardware, firmware, and/or software for accomplishing the methods discussed herein, and, possibly, computer readable media storing software for accomplishing these methods and system. The various modules described herein can be provided in conjunction with a single CPU, or on an arbitrary number of different CPUs. Other alternative computer platforms can be used. The operating system can be, for example, but is not limited to, WINDOWS®, LINUX®, and VMS. Communications links can be wired or wireless, for example, using cellular communication systems, military communications systems, and satellite communications systems. Any data and results can be stored for future retrieval and processing, printed, displayed, transferred to another computer, and/or transferred elsewhere. In compliance with the statute, the present teachings have been described in language more or less specific as to structural and methodical features. It is to be understood, however, that the present teachings are not limited to the specific features shown.

[0399] Referring again to FIGS. **46A-46D**, **55Q**, and **56-61**, methods **1500** (FIG. **46A**), **1550** (FIG. **46B**), **1580** (FIG. **46C**), **1530** (FIG. **46D**), **3160** (FIG. **55Q**), **150** (FIG. **56**), **250** (FIG. **57**), **149** (FIG. **58**) **249** (FIG. **59**), **600** (FIG. **60**), **620** (FIG. **61**), can be, in whole or in part, implemented electronically. Signals representing actions taken by elements of systems that implement the methods of the present configuration, and other disclosed configurations can travel over at least one live communications network. Control and data information can be electronically executed and stored on at least one computer-readable medium. The system can be implemented to execute on at least one computer node in at least one live communications network enabled by such protocols as TCP/IP and PCAN, for example. Common forms of at least one computer-readable medium can include, for example, but not be limited to, a floppy disk, a flexible disk, a hard disk, magnetic tape, or any other magnetic medium, a compact disk read only memory or any other optical medium, punched cards, paper tape, or any other physical medium with patterns of holes, a random access memory, a programmable read only memory, and erasable programmable read only memory (EPROM), a Flash EPROM, or any other memory chip or cartridge, or any other medium from which a computer can read. Further, the at least one computer readable medium can contain graphs in any form including, but not limited to, Graphic Interchange Format (GIF), Joint Photographic Experts Group (JPEG), Portable Network Graphics (PNG), Scalable Vector Graphics (SVG), and Tagged Image File Format (TIFF).

[0400] The configurations shown in drawings are presented only to demonstrate certain examples of the present teachings. The drawings described are illustrative and are non-limiting. In the drawings, for illustrative purposes, the size of some of the elements may not be drawn to a particular scale. Elements shown within the drawings that have the same numbers may be identical elements or may be similar elements, depending on the context.

[0401] The terms "first", "second", "third" and the like, whether used in the description or in the claims, are provided for distinguishing elements. It is to be understood that the terms so used are interchangeable under appropriate circumstances (unless clearly disclosed otherwise) and that the configurations of the disclosure described herein are capable of operation in other sequences and/or arrangements than are described or illustrated herein.

[0402] While the present teachings have been described above in terms of specific examples, it is to be understood that the present teachings are not limited to the disclosed examples. Many modifications and other examples are intended to be and are covered by this disclosure and the appended claims.

What is claimed is:

1. A system for engineering a transplantable tissue comprising:

a recipe including recipe steps;

a graphical user interface (GUI) receiving GUI input; and

a controller accessing the recipe steps, the GUI input, and at least one default value, the controller forming at least one controller command based on arbitrating the at least one default value, the recipe steps, and the GUI input, the controller executing the at least one controller command to engineer the transplantable tissue, the transplantable tissue including donor tissue.

2. The system as in claim **1** wherein the controller comprises updating the GUI and updating the recipe steps.

3. The system as in claim **1** further comprising:

at least one cassette having a flexible sheet covering at least one pumping chamber, the flexible sheet covering at least one cassette fluid valve;

a bioreactor housing the donor tissue, the bioreactor being in fluid communication with the at least one cassette; and